

A NEW COMBINATION IN MUHLENBERGIA (POACEAE)

Clifford W. Morden

Department of Botany and Center for Conservation Research and Training, 3190
Maile Way, University of Hawaii at Manoa, Honolulu, Hawaii 96822 U.S.A.
cmorden@uhunix.uhcc.hawaii.edu

ABSTRACT

Systematic analyses of morphological and anatomical variation among populations of *Muhlenbergia villiflora* and *M. villosa* indicate that there is insufficient differentiation to warrant recognition of these taxa as separate species. The new combination of *M. villiflora* var. *villosa* is proposed as a more appropriate means of recognizing the habitat preference and slight differences in spikelet size that distinguish these taxa. Nomenclatural data and a key to the varieties are provided.

KEY WORDS: *Muhlenbergia*, Poaceae, systematics

Species of the *Muhlenbergia repens* Hitchc. complex are distributed throughout North America (excluding the southeastern United States), and in the Andean highlands of South America. This complex consists of eight species characterized by a rhizomatous perennial habit with short culms seldom exceeding 20 cm, short involute leaf blades, and a short contracted panicle with awnless or mucronate spikelets. Two species, *M. villiflora* Hitchc. and *M. villosa* Swallen, differ from the others by having a densely villous lemma and palea. These species appear distinct from each other in that *M. villosa* is slightly larger in all morphological attributes including plant height, leaf size, inflorescence length, and spikelet length. Their distribution and habitat requirements are also distinct; *M. villiflora* is an ecological dominant in gypsum soils of northern México, and *M. villosa* is locally sporadic to common in alkaline or calcareous soils of west Texas and New Mexico.

Morphological and anatomical analyses of these two species (Morden 1985; Morden & Hatch 1987) have shown that specific recognition of both taxa is not warranted. Anatomically, these taxa are indistinguishable (Morden & Hatch 1987), and plants of *Muhlenbergia villiflora* found growing along the margins of their natural habitats (*i.e.*, soils with a more abundant water supply or lower concentration of gypsum) are larger, and approach *M. villosa* in most characteristics. Therefore, these species are herein treated as a single species, *M. villiflora*, and the two forms are recognized as varieties, var. *villiflora* and var. *villosa* (Swallen) Morden based on their

habitat preferences and morphological differences. A key to the varieties and complete descriptions are provided below.

Spikelets usually less than 2.0 mm long; plants of gypsiferous soils of northern México.1. *M. villiflora* var. *villiflora*

Spikelets usually greater than 2.0 mm long; plants of alkaline or calcareous soils, west Texas and New Mexico.2. *M. villiflora* var. *villosa*

1. *Muhlenbergia villiflora* Hitchc. var. *villiflora*, North Amer. Fl. 17:470. 1935.--*Vilfa pubescens* Fourn., *Mex. Pl.* 2:102. 1886. TYPE: MEXICO. Cañon de las Miñas et Victoria, inter Michibuana et Tanquecillos, *Karwinsky 1012* (HOLOTYPE: P; Type fragment: US!). Not *Muhlenbergia pubescens* (H.B.K.) Hitchc. (North Amer. Fl. 17:460. 1935.).

Perennial with scaly rhizomes; the scales 3-18 mm long, acute, often deteriorating with age. Culms much-branched above, wiry, erect, seldom spreading, 7-17 cm tall (rarely higher), 0.3-0.7 mm diam., glabrous; internodes 5-33 mm long, nodulose-roughened at least below the inflorescence. Sheaths 3-16 mm long, usually about 1/2 the length of the internode, margins hyaline and clasping at the base, open and diverging from culm near the leaf collar. Ligules membranous, 0.3-1.5 mm long, erose, toothed, or acute, decurrent. Blades 3-19 mm long, 0.2-1.0 mm wide, abaxial surface glabrous, adaxial surface pubescent, strongly involute and arcuate spreading, margins scabrous, prominent midvein absent. Inflorescence a contracted panicle, 1-4 cm long (occasionally longer), 1-15 mm wide or wider if branches open or reflexed, usually exerted above the upper leaf sheath; inflorescence branches solitary at each node, with 4-11 nodes per inflorescence; branches ascending. Pedicels 0.1-1.1 mm long, minutely setose. Spikelets 1.4-2.3 mm long, not crowded on the branches, 1-15 spikelets on the lowermost panicle branch. Glumes equal, 0.6-1.7 mm long, acute, 1/2-2/3 the length of the floret, 1 (occasionally 2-or 3-) -nerved, green or purple. Lemmas acute, 1.3-2.3 mm long, 3-nerved, densely villous near the base and along midnerve and margins to near the apex, green or becoming purple at maturity; mucro absent to 0.6 mm long. Paleas 1.0-2.1 mm long, densely villous between the nerves, with color similar to lemma. Anthers 0.7-1.6 mm long, yellow, dark green, or purple. Caryopses narrowly elliptic to linear, 0.7-1.2 mm long, 0.2-0.3 mm wide, dark brown. Chromosome number $2n = 20, 22$ (Reeder 1967).

Distribution. México: Chihuahua, Coahuila, Hidalgo, Nuevo León, San Luis Potosí, and Zacatecas. Open ground in gypsiferous to calcareous soils, often forming extensive stands across gypsum flats.

2. **MUHLENBERGIA VILLIFLORA** Hitchc. var. **VILLOSA** (Swallen) Morden, *stat. nov.*-- BASIONYM: *Muhlenbergia villosa* Swallen, J. Wash. Acad. Sci. 31:350. f. 2 1941. TYPE: UNITED STATES. Texas: 15 miles south of Stanton, 11 July 1928, *Tharp 5048* (HOLOTYPE: US!; Isotypes: GH!, MO!, TEX!).

Perennial with scaly rhizomes; the scales 5-16 mm long, acute, often deteriorating with age. Culms much-branched above, wiry, erect, seldom spreading, 4-30 cm tall, 0.3-0.7 mm diam., glabrous; internodes 5-37 mm long, nodulose-roughened at least below the inflorescence. Sheaths 5-15 mm long, usually about 1/2 the length of the internode, margins hyaline and clasping at the base, open and diverging from culm

near the leaf collar. Ligules membranous, 0.4-1.5 mm long, erose, toothed, or acute, decurrent. Blades 7-30 mm long, 0.2-1.2 mm broad, abaxial surface glabrous, adaxial surface pubescent, strongly involute and arcuate spreading, margins scabrous, prominent midvein absent. Inflorescence a contracted panicle, 1-5 cm long, 1-5 mm wide, usually exerted above the upper leaf sheaths; inflorescence branches solitary at each node, with 5-11 nodes per inflorescence; branches ascending. Pedicels 0.1-1.2 mm long, minutely setose. Spikelets 1.8-2.5 mm long, not crowded on the branches, with 2-9 spikelets on the lowermost panicle branch. Glumes equal, 0.6-1.8 mm long, acute, 1/2-2/3 the length of the floret, 1 (rarely 2) -nerved, green or purple. Lemmas acute, 1.8-2.4 mm long, 3-nerved, densely villous near the base and along the midnerve and margins to near the apex, green or becoming purple with maturity; mucro absent to 0.4 mm long. Paleas 1.7-2.3 mm long, densely villous between the nerves, color similar to the lemma. Anthers 0.9-1.4 mm long, yellow, dark green or purple. Caryopses narrowly elliptic to linear, 1.0-1.4 mm long, 0.2-0.4 mm wide, dark brown. Chromosome number $2n = 20, 40$ (Morden 1985; Reeder 1967).

Distribution. United States: southern New Mexico and Texas in the Trans-Pecos, western Edwards Plateau and southern High Plains. Open ground in alkaline to calcareous soils, usually in isolated clumps and seldom forming dense stands.

LITERATURE CITED

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